CLAIMS:

1. A probing router comprising:

a bus;

a routing engine coupled to the bus and configured to forward packets to a communications network;

a communication network port coupled to the bus and configured to connect to a communication network and transmit a probe message and the packets therethrough; and

a probe mechanism configured to generate and send the probe message through said communication network port to the communication network at a time T1, said probe mechanism sending the probe message over an in-band communication channel.

2. The probing router of Claim 1, wherein:

said probe mechanism being configured to receive a reply probe message at a second time, T2, sent by a destination router in response to receiving said probe message with a remote latency indicator therein so that service level agreement characteristics may subsequently be derived by comparing T1, T2 and the remote latency indicator.

3. The probing router of Claim 2, further comprising:

a memory, wherein

the probe mechanism being configured to identify and store in the memory the service level agreement characteristics.

4. The probing router of Claim 1, wherein:

said in-band channel being a tunnel channel in a virtual private network.

5. The probing router of Claim 2, wherein:

said reply probe message including a data field configured to hold the remote latency indicator that represents an amount of time between when said destination router received said probe message and when said destination router sent said reply probe message.

6. The probing router of Claim 1, wherein:

a polling interval at which said probe mechanism sends said probe message being a remotely programmable setting.

7. The probing router of Claim 3, wherein:

said probe mechanism being configured to send at least one of T1, T2, and the remote latency indicator to a probe poller device that calculates service level agreement statistics.

8. The probing router of Claim 7, wherein:

said probe mechanism being configured to calculate service level agreement statistics based on T1, T2, and the remote latency, said service level agreement statistics including at least one of a network availability statistic and a packet loss rate.

9. A computer-readable medium carrying one or more sequences of one or more instructions for sending a probe message, the one or more sequences of one or more instructions including instructions which, when executed by one or more processors, cause the one or more processors to perform the steps of:

(a) preparing a probe message; and

(b) sending said probe message over an in-band communication channel.

10. The computer-readable medium according to Claim 9, wherein the probe message includes a time stamp, T1, representing when said probe message is sent in said sending step.

11. The computer-readable medium according to Claim 10, wherein when the one or more instructions are executed by the one or more processors cause the one or more processors to further perform the steps of:

receiving at a second time, T2, a reply probe message sent from a destination probing router; and

extracting a remote latency indicator from said reply probe message, said remote latency indicator representing an amount of time between when said destination probing router received said probe message and when said destination probing router sent said reply probe message.

12. The computer-readable medium of Claim 11, wherein when the one or more instructions are executed by the one or more processors cause the one or more processors to further perform the step of:

calculating service level agreement statistics associated with the in-band communication channel of the virtual private communication network from T1, T2 and said remote latency indicator.

13. The computer-readable medium of Claim 9, wherein said in-band channel being an in-band channel of a virtual private network.

14. A communication system for gathering traffic statistics, comprising:

a probing router configured to prepare performance statistics information;

a probe poller processor configured to receive performance statistics information collected by a probing router that sends a probe message through an in-band channel; and

a reporting mechanism coupled to said probe poller processor and configured to present a compilation of said performance statistics information for comparison against performance thresholds of a service level agreement.

15. The system of Claim 14, wherein said in-band channel being in a virtual private network.

16. The system of Claim 14, wherein said probing router being within a customer premise.

17. The system of Claim 14, wherein said reporting mechanism being configured to report said performance statistics information in at least one of a printed form and a graphically displayed form.

18. The system of Claim 14, wherein said reporting mechanism being configured to report said performance statistics on an Internet web site.

19. The system of Claim 14, further comprising:

a virtual private network builder configured to receive topology information regarding an assignment of probing routers to the virtual private network and produce a control signal to be distributed to respective probing routers, said probing router being one of said probing routers.

20. The virtual private network operation center of Claim 19, wherein:

said control signal including a polling interval indicator that sets a polling interval at which said probing router sends said probe message.

21. The virtual private network operation center of Claim 14, wherein:

said probe poller processor being configured to calculate at least one of an availability and a packet loss rate of said in-band communication channel from said performance statistics information.

22. A probing router comprising:

means for routing data packets within a virtual private network;

means for preparing and sending a probe message through an in-band channel of the virtual private network; and

an enclosure that houses said means for routing and said means for preparing and sending.

23. A method for collecting network performance statistics, comprising the steps of:

(a) preparing a probe message with a probing router;

(b) sending said probe message over an in-band communication channel; and

(c) measuring a propagation time for said probe message to reach a predetermined location.

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